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SX-7205 SmartBits Fast Ethernet SmartCard

The SX-7205 is a SmartBits compatible SmartCard, providing a single port interface for generating and monitoring both 100 Mbps and 10 Mbps Ethernet traffic in half and full duplex modes. The Fast Ethernet physical interface is an MII interface. The Fast Ethernet SmartCard operation complies with the 100BASE-X IEEE specification.

MII Interface



The SX-7205 has an MII interface compliant with the 100Base-X specification. A female 40 pin high-density connector is mounted on the front panel allowing users to connect a transceiver directly (or via an MII compliant cable) to the SmartCard. The SmartBits controller configures the transceiver via the MII basic and extended management registers. Control of the transceiver is continuous and transparent to the user. The user may plug in and remove transceivers from the Fast Ethernet SmartCard with the power on. Transceivers are available to go from MII to TX, FX, or T4.

Transmit Functions

Data Rates

Scales between 10 Mbps and 100 Mbps operation according to transceiver setting. Transceiver's data rate is adjustable through the MII register interface.

Transmit Modes

Continuous Mode: Transmits a constant stream of packets.

Single Burst Mode: Up to 16 million packets in a single burst with user selected Interpacket Gap.

Multiburst Mode: Up to 65,536 repetitive bursts with a user-adjustable delay in 40 nS intervals (maximum 2.68 seconds) between each burst.

Continuous Multiburst Mode: Runs multiburst mode continuously.

Echo Mode: Transmits a single packet upon detection of a specified byte trigger pattern in the data of a received packet.

Background Packet Data Fill Pattern

The default pattern is all zeros. The user may

Counters

The counters can hold a maximum of 4 billion counts before cycling. All counters can display either rates or events.

Transmit Packet Counter: Counts the number of packets successfully transmitted.

Receive Packet Counter: Counts valid packets received.

Collision Counter: Counts collisions.

CRC Error Counter: Counts only valid frame length packets with bad CRC or misalignment.

Oversize Packet Counter: Counts packets with size greater than 1518 bytes inclusive of CRC.

Fragment/Undersize Counter: Counts undersized packet and fragments received with size less than 64 bytes inclusive of CRC.

Bytes Received Counter: Counts all received bytes OR only bytes received in valid packets (user selected choice).

Trigger Counter: This counter counts the number of received triggers.

Latency

configure a custom background fill or choose from: incrementing byte, decrementing byte, incrementing word, decrementing word, random data, all zeros, all ones, FF00...,00FF..., FFFF0000...,0000FFFF,FFFFFFFF00000000..., 00000000FFFFFFFF, AAAA..., 5555...

Half /Full Duplex Mode

Automatically supports Half or Full Duplex operation according to transceiver MII control register's setting.

Variable Field Data

Allows insertion of up to three varying data fields in the transmitted packet.

VFD1 and VFD2: May be up to 6 bytes in length specified by the following selections:

On/Off; Value; Static; Increment; Decrement; Random. The offset is 0 to 8192 bytes.

VFD3: User specified 2048 Byte buffer to create a custom VFD sequence varying from packet to packet with the following selections: *On/Off*; *Offset; Number of Packets; VFD3 Length.*

Error Insertion

Transmission error selection: *CRC Errors*; *Alignment Errors*, inserts 4 extra bits before CRC; *Dribbling Bits*, inserts 4 extra bits after CRC; *Symbol Error; Collisions* upon packet receipt, up to user specified number.

Interpacket Gap

The interpacket gap at 100Mbps is 40 nanoseconds to 1.6 seconds in 40 nanosecond increments. *Random Gap:* randomly varies from 960 nS to the user specified maximum from 6.5 mS to 1600 mS. At 10 Mbps, Gap resolution is 400 nS.

Packet Length

Packet lengths from 1 to 8191 bytes fixed, or random varying from 64 to 1514 Bytes.

The SX-7205 can measure the latency from another module transmit to receive of packet in 100 nS resolution. Measurements can include a mix of 100Mbps and 10Mbps.

Requirements

SMB-1000/ET-1000 Firmware Version 4.05

SmartWindows Version 5.12 or higher

Smart Application version 1.3 or higher

Programming Library version 2.21 or higher

Software Support

SmartWindows

A Windows graphic user interface used to implement all functions of Fast SmartCards as well as control and set up SmartBits tests. SmartWindows includes convenient methods to set up many ports, monitor the status of and view data gathered by all active Fast SmartCards. Requires a 486 PC computer with 8 Mb RAM with mouse and color monitor running Windows 3.1 or Windows 95.

Programming Library

The Programming Library supports the new features and enhanced counters, and is designed to help you easily develop customized test programs using Visual Basic, C, or C++. Two versions available: one for PC based applications (under DOS or Windows), another version for the UNIX environment.

SmartApplications

Windows based user interface which works with any combination of 10 Mbps SmartCards and 100/10 Mbps Fast SmartCards. These applications automate RFC-1242 for determining ThroughPut, Packet Loss, Latency, and Back to Back Performance. Included are production Go/No-Go tests for "minimum acceptable" performance levels.

Advanced Switch Test

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Receive Functions

Triggers

Two independent triggers from 1 to 6 bytes each. Trigger offset can be adjusted from the last preamble byte to the last byte of CRC in 1 bye increments. Trigger counter can be set to:

Trigger 1, Trigger 2, 1 or 2, 1 and 2.

Advanced Switch Test for performance measurement of Ethernet Switches for many ports to one port, one port to many ports, and many ports to many ports, is also available.

Requires a 486 PC computer with 8 Mb RAM with mouse and color monitor running Windows 3.1 or Windows 95.

For further information on the SX7205 Fast SmartCard or the SmartBits system, it's unique features, specifications and interface capabilities, please contact our Sales Department at: (818) 700-5100 or via E Mail Sales@NetcomSystems.com.

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